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## Case Report

# Homolateral Extremity Synkinesia after the Stroke - ̂

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## ABSTRACT

The incidence of involuntary movement disorders has not yet been clearly known. It has been reported in studies that it is observed in 4% of stroke patients. Hemikore, hemiballismus, dystonic tremor, and myoclonus cases have been reported after the stroke. Synkinesia is a rare disorder which is characterized with voluntary movements that are observed together with involuntary movement coordination. In this case study, since it is a rare event, we reported a case with homolateral extremity synkinesia after the stroke.

**Keywords:** Stroke; Homolateral extremity synkinesia; Motor cortex

## INTRODUCTION

The incidence of involuntary movement disorders has not yet been clearly known. It has been reported in studies that it is observed in 4% of stroke patients. These involuntary movements can be focal, segmental, unilateral, or bilateral. Himekore, hemiballismus, dystonic tremor, and myoclonus cases have been reported after the stroke [1]. In this case study, we reported a case with homolateral extremity synkinesia after the stroke because it is a rare event.

## CASE

A 58 year-old female patient was admitted to our clinic because of a sudden weakness in her left arm and her leg. The patient was using warfarin and she had an aortic and mitral valve surgery 30 years ago. According to her neurological examination, muscle strength in the left limb and left lower extremity was 0-1/5. Babinski reflex was positive in the left side. Other neurological examinations were normal. According to the blood tests, the INR value was 1.7. Computed Tomography (CT) was performed. Gray-white matter differentiation was lost in the centrum semiovale and vertex level of the right frontal and parietal lobe in the precentral and postsantral gyrus. Neural parenchyma was with edema at this level. It was not possible for the patient to enter the MRI screening room because she had a metallic heart valve. Therefore, diffusion MRI was not performed. The patient was diagnosed with ischemic cerebrovascular event and the anticoagulant treatment continued. It was observed during the follow ups that the muscle strength of the patient was improved. Furthermore, it was noticed that she involuntarily lifted her left leg when she lifted her left arm. The patient could not prevent lifting her left leg. It was thought that the homolateral extremity synkinesia might be the diagnosis. Gabapentin (300mg/day) was administered to the patient. Its dose was increased to 600mg/day during the follow ups. The patient was completely recovered.

## DISCUSSION

Synkinesia is a rare disorder which is characterized with voluntary movements that are observed together with involuntary movement coordination. It is developed as a secondary disease to an abnormal neuronal degeneration and it is reported mostly after the facial nerve and brachial plexus damage [2,3,4]. Synkinesias can be grouped as homologous or heterologous. In homologous synkinesias, muscles that are located at the contralateral side of the muscle group were also involved in the movement. These synkinesias can be physiologically observed in children. However, they can develop as a result of the contralateral premotor cortex activation which can occur due to the decreased interhemispheric inhibition in Parkinson's disease and Creutzfeldt Jakob Disease [5,6]. Heterologous synkinesias can be observed in both arms and legs depending on the increased supplementary motor cortex activation [7]. In our case, the diagnosis was heterologous synkinesia because of the synchronized motion of the left arm and the leg. Anatomical connections between the arms and legs in the primary motor cortex do not coincide. These connections coincide with secondary motor cortexes such as ventral

premotor cortex, and the supplementary and cingulate cortex. The synchronization between arms and legs develops with the help of inputs which are transferred from the secondary motor cortex to the primary motor cortex. It is believed that homolateral extremity synkinesias develop because of the dysfunctions of secondary motor cortex or the connections between the secondary and the primary motor cortex [8]. In the literature, there are homolateral extremity synkinesia cases which were developed due to the syringomyelia and parietal tumors [9,10]. In our case, it is believed that there is a homolateral extremity synkinesias depending on the lesions in the frontal and parietal lobes which were observed because of cerebrovascular events. In literature, the gabapentin administration is effective in the treatment of synkinesias which are observed after the peripheral facial nerve [11]. Gabapentin (300mg/day) was administered to the patient. Its dose was increased to 600mg/day during the follow ups. The patient was completely recovered. Consequently, homolateral extremity synkinesia is a rare motion disorder and it should be considered that it can be observed after the stroke.

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